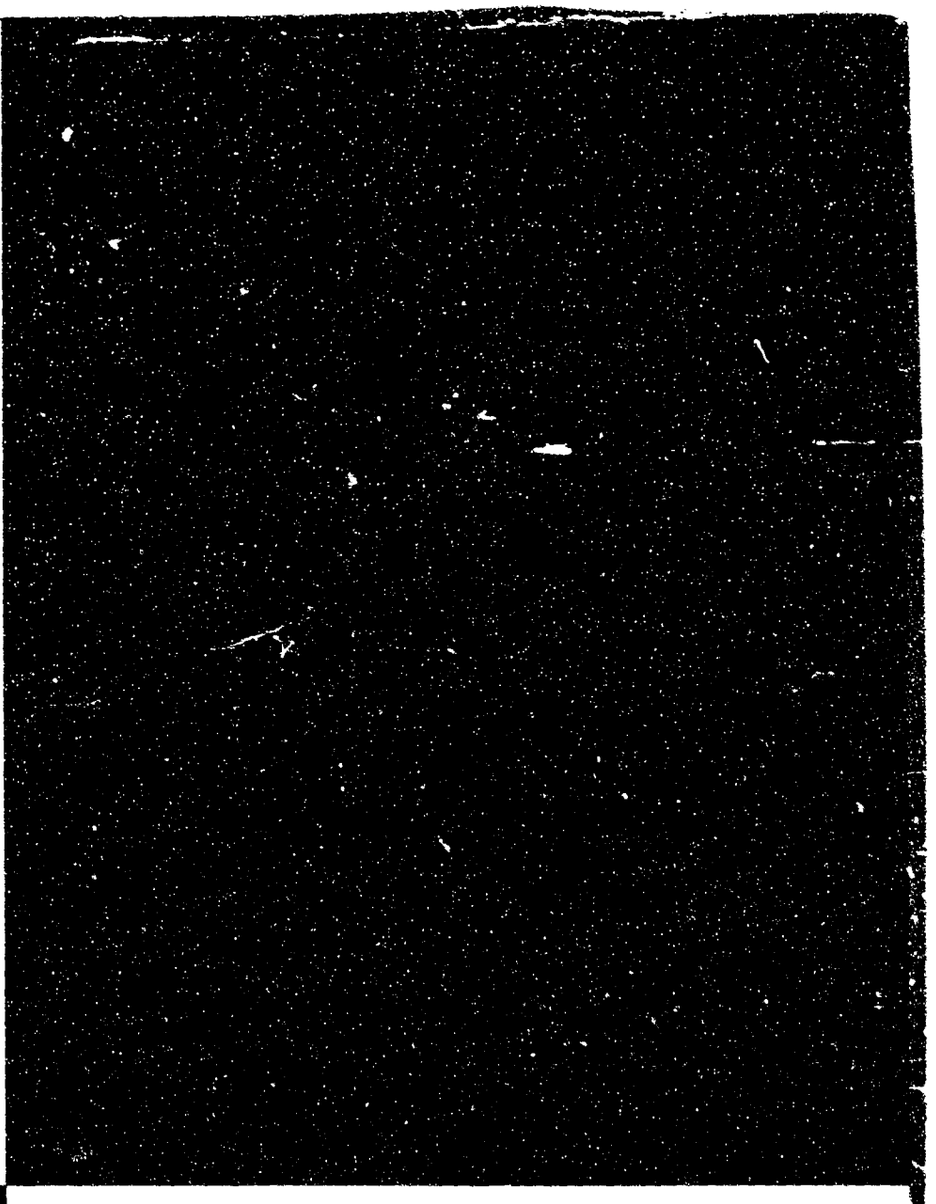
RADIO WARNING STUDIES

October 1965



Prepared for:

OFFICE OF CIVIL DEFENSE
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20301

RADIO
WARNING
STUDIES

METHODS OF DISTRIBUTING RADIO ALERT AND WARNING RECEIVERS

By:

George E. Hackley

Contract No. OCD-PS-64-233
SRI Project No. MU-5071

October 1965

STANFORD
RESEARCH
INSTITUTE

MENLO PARK
CALIFORNIA

Prepared for:

OFFICE OF CIVIL DEFENSE
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20301

FOREWORD

This document has been prepared as partial fulfillment of Contract No. OCD-PS-64-233 between the Office of Civil Defense and Stanford Research Institute, and is designed for use by the Office of Civil Defense and its contractors in developing a national radio warning system. It is the final version of a preliminary working paper prepared for OCD review in August 1965.

The research was conducted by George E. Hackley, with valuable assistance from David A. Curry and Albert E. Moon of SRI. The helpful assistance of the Office of Civil Defense, particularly Ralph D. Sinnott, is greatly appreciated.

CONTENTS

ILLUSTRATIONS

TABLES

I INTRODUCTION

As a part of the program of the Office of Civil Defense to complete its planning of a radio alert and warning system, an analysis of methods of distributing the radio alert and warning receivers to the public was undertaken by the Institute.

The basic objectives of this analysis were to analyze feasible methods of distributing receivers to the public, to forecast the number of receivers likely to be in operation in the future, and to describe the conditions under which desired levels of distribution might be achieved.

To aid in making these forecasts, data developed during an earlier study of the NEAR system were analyzed,* together with sales data of other safety products and sales data of consumer products with which the alert and warning receivers might be combined. Discussions were held with 28 people in 14 organizations, representing eight of the largest manufacturers of radio and television sets, as well as merchandising trade associations, and suppliers to the electronics industry, as shown in Appendix B. These discussions supplemented those held earlier in connection with the Institute study of the NEAR devices, in which 71 individuals in 40 organizations were contacted.*

For the purposes of this study, it is assumed that the general level of international tension will not materially change during the next several years (although the possibility of a major crisis and its impact on receiver distribution is considered in the report). It is further assumed that the various ongoing CD programs will continue, and that the percentage of the population that can be sheltered will continue to rise significantly.

---

* Alternative Methods for Distributing Alert Devices, George E. Hackley, Stanford Research Institute, January 1964.

II SUMMARY AND CONCLUSIONS

The proposed radio alert and warning receivers are the kind of product that people do not readily buy because there is no immediate use for them. Before such a product can achieve a widespread distribution, it is necessary to educate the public to its benefits. Under the present level of international tension and with no educational or advertising program, it is likely that fewer than one percent of all households would buy receivers in the next ten years, at the assumed price range of $15 to $25. With a campaign of continued education and advertising to convince people that owning receivers will help in saving their lives and that there will be shelters to protect them if they receive warning, the level of distribution could be raised to about 10 percent of all households within 10 years. This assumes a campaign approaching 10 million dollars per year (but such a level of advertising could be undertaken at relatively little cost to the federal government if the various advertising media could be convinced of the desirability of the alert and warning system and the receivers).

By providing other useful functions in the receivers, such as including a capability for local warning of storms or other disasters, the distribution level could be raised to perhaps 15 to 20 percent of all households within 10 years, if there was no added cost.

Still greater demand could be stimulated if an entertainment function was added. For example, if the capability for conventional AM radio broadcast reception was added, up to 65 percent of all households would probably buy one within 10 years if there was no added cost, and possibly 40 percent would buy one if the added cost was $5.00. Even better distribution could be obtained by including the alert and warning receiver capability in all AC-operated home radios, television sets, and radio-phonographs. This would result in over 90 percent of all households having one or more alert and warning receivers within 10 years. This last method of distribution would be highly effective, but Congressional action would be necessary. Such action may be difficult and take several years to obtain. There would be a significant advantage in combining an entertainment function with the alert and warning function: the main portion of the instrument would be used frequently, thus providing greater assurance that the receiver would operate automatically when it was needed.

Under conditions of severe international tension, where a major war seemed imminent, demand for the receivers would increase rapidly. About 50 percent of the households would buy under such conditions if the price was $15, and about 40 percent would buy if the price was $25. To cope with a sudden rise in demand because of a heightening of international tension, it would be desirable to have a reserve supply of special parts used in the receivers to shorten the time needed to increase production.

Free distribution of the receivers by the federal government would result in the same level of distribution as in the case of including them in all AC home radios, TVs, and radio-phonographs (90 percent). Free distribution could be handled in several ways. The most effective way would be to distribute them through the mails. While this procedure might reduce the overall program cost, the direct cost to the federal government would be increased and it might be difficult or impossible to obtain funding for such a plan.

No plan for leasing receivers to the public is included in this analysis since the subject was discussed in the earlier NEAR report, and no logical new means was found for leasing.

Any program of implementation of the radio alert and warning system should include a plan to distribute receivers to all civil defense emergency personnel, without charge to them. There are about 3 million of these people (corresponding to about 5 percent of all households), including both regular civil defense employees and volunteer or part-time emergency personnel. In addition to ensuring that all key civil defense personnel would have immediate notification of an emergency, the presence of receivers in so many houses would stimulate the interest of others in the device. A second benefit would be that production experience would be gained during the time that these receivers were being manufactured for CD personnel and there would be opportunities for design improvements and cost reductions.

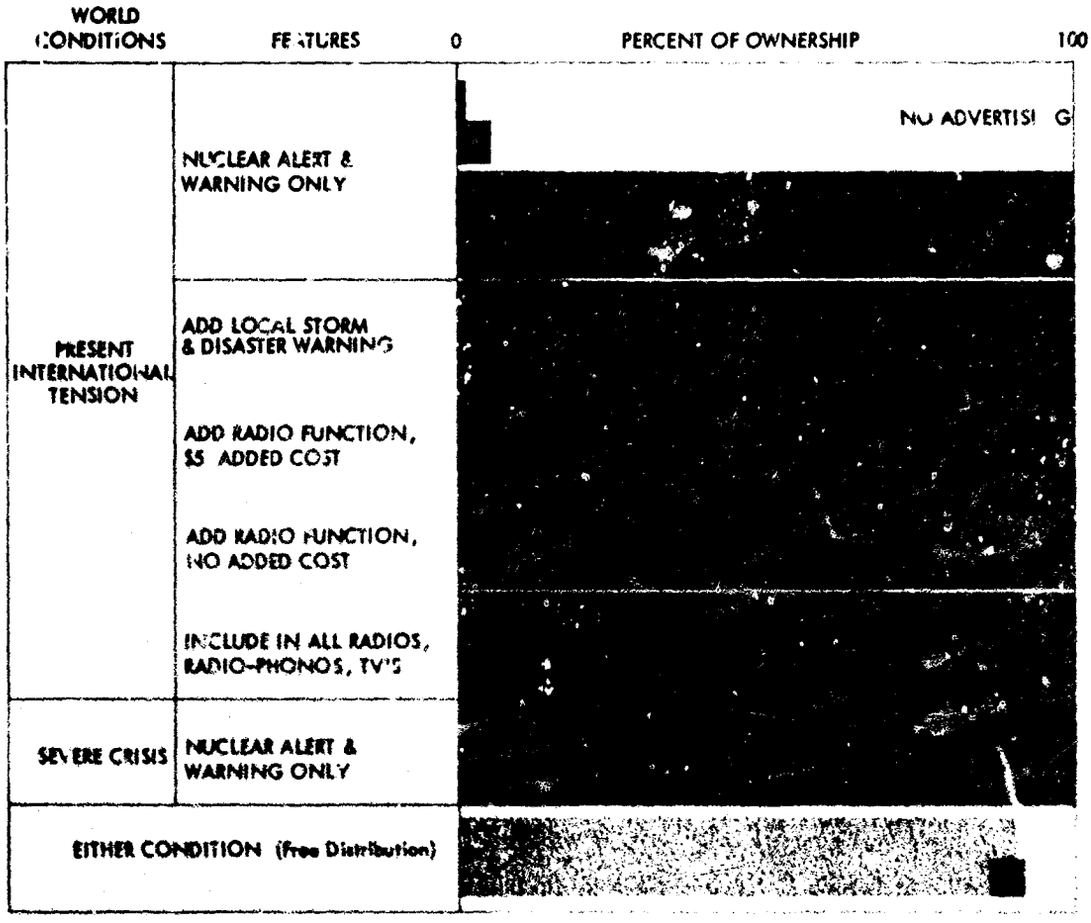
Figure 1 summarizes the foregoing points in graphic form.

The highest distribution would be obtained by offering several forms of the radio alert and warning receiver, in order to give the consumer a wide selection from which to choose.

Good cooperation by manufacturers and merchandisers can be expected if the alert and warning system is properly justified, explained, and advertised. Added assistance in guiding both the Office of Civil Defense and potential manufacturers and merchandisers would be provided by a comprehensive consumer survey. Such surveys are normally undertaken prior to the introduction of any major new product, and would be very helpful in determining proper receiver pricing, features, and appearance.

Figure 1

RADIO ALERT AND WARNING RECEIVER OWNERSHIP WITHIN 10 YEARS AFTER START OF DISTRIBUTION



III MEANS OF BUILDING UP DEMAND

The primary function of a radio alert and warning receiver is to automatically alert people of a nuclear attack, to tell them something of the nature of the attack, and to tell them what to do. Thus it is a product that would provide people with some degree of protection against a possible threat, in the same sense that home fire alarm and burglar alarm systems warn people of a potential danger, but do not in themselves directly protect them.

As a safety product, the radio alert and warning receiver falls into a broad class of products, including:

Fire alarms
Fire extinguishers
Burglar alarms
Automobile seat belts
Fallout shelters
Radiation dosimeters and ratemeters
Vaccines

Consumer Demand for Safety Products

Safety products appeal to the self-protection motive, and it is notoriously difficult to sell such products to more than a small minority of the public. Safety products have a negative value in people's minds, as contrasted to products that appeal to personal pleasure or are labor saving. Safety products tend to be bought only when a serious need, real or imagined, arises.

This negative value of safety products is a difficult obstacle to overcome without a major public education and advertising campaign. Of all the safety products listed above, only the Sabine polio vaccine has had widespread sales during a major one-shot campaign, but here the price was very low (25¢) and the advertising was intensive. In contrast, only about 1 percent of all households own fire extinguishers--at a cost of $7 to $10.

Purchases of safety products are frequently put off, but the demand for them rises rapidly to a high level when they are actually needed or if a crisis arises. For example, antifreeze sales are very low prior to the first freezing weather, in spite of heavy advertising ahead of time, but the demand shoots up immediately following this first freeze. Similarly, umbrellas and raincoats sell slowly during good weather.

Historically, consumer products related to civilian defense have followed this same pattern. Sales of dosimeters and fallout shelters to the public have been negligible during normal times. However, during times of crisis, the demand exceeds the supply. An example of this behavior pattern is illustrated in Figure 2, which shows shelter sales from June 1960 to June 1962. As evidenced by FHA loans for home fallout shelters, shelter sales were extremely small before and after the Berlin wall was built in 1961 and the national fallout shelter program was announced. During the Berlin crisis period, however, shelter sales rose almost immediately to a peak that was 70 times the level of sales a year earlier.

Likely Demand for Radio Alert and Warning Receivers under Various Conditions

The likely consumer demand for radio alert and warning receivers would similarly depend on the state of international tension. For the purpose of estimating demand, two basic conditions have been assumed: a noncrisis condition (like the present) and a crisis condition.

Noncrisis Conditions

Under the conditions of moderate international tension, such as at present, the public has shown little willingness to purchase civilian defense products. Total sales of dosimeters and ratemeters for home consumption--costing about $25 each--are very low, estimated at well under 1,000 per month. The construction of family fallout shelters is similarly small, with only about one-quarter million having been built to date.

Sales of the proposed radio alert and warning receivers to the public on the open market under present conditions would probably be very small at prices of $15 to $25. Only a fraction of a percent of the households would be apt to buy them. Experienced manufacturers and merchandisers, recognizing that the public would buy few receivers under present conditions, have expressed little interest in making these receivers and selling them on the open market. However, they recognize that there are conditions under which the receivers could be sold, as discussed later in this report, and they would be willing to cooperate in an appropriate federally sponsored program.

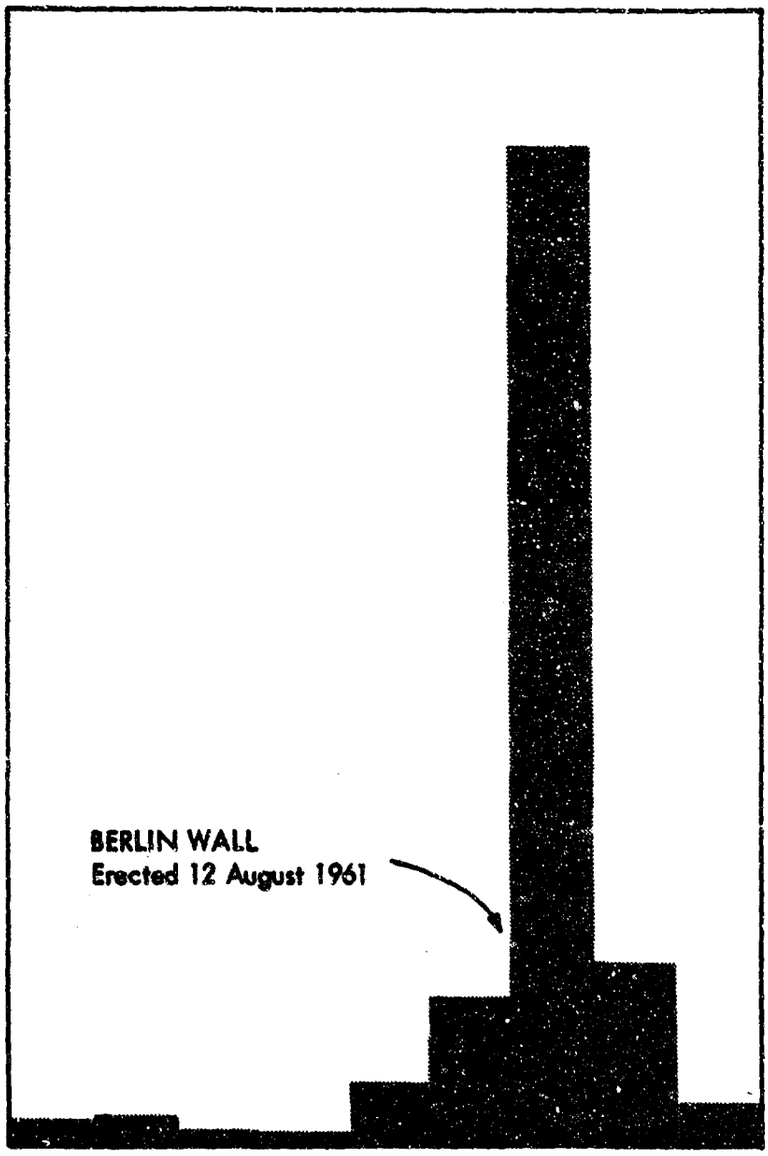
Crisis Condition

Under conditions of a severe crisis, in which an attack on U.S. cities seemed likely, a very large percentage of the people would be willing to purchase radio alert and warning receivers. The amount of purchase would depend on the severity and duration of the crisis and the rate of buildup of the crisis. For the purposes of this report, two crisis conditions are considered: (1) a very rapid buildup in a matter of days, such as occurred in the Cuban missile crisis of 1962, (2) a slow buildup over a period of many months.

Figure 2

FALLOUT SHELTER SALES DURING THE 1961 BERLIN WALL CRISIS

Based on Quarterly FHA Home Fallout Shelter Loans



In the case of a rapid buildup to a severe crisis, demand would be so high that it would be impossible to supply receivers fast enough, unless they were locally stockpiled and readily available for distribution. (Refer to Figure 2, shown earlier.) Estimates of the percentage of people that would be likely to purchase receivers under these conditions can be derived from a study of the NEAR receiver undertaken by the University of Pittsburgh.* In this study, 1,402 people were interviewed in a nationwide block sample survey, to obtain their reactions to questions about buying, leasing, or accepting a free NEAR receiver. The NEAR receiver was described as an alert-only device, that would start buzzing if the United States was attacked; the buzzing would indicate that people should turn on their radios for emergency information. Without cost being specified, 55 percent of the respondents indicated that they would probably acquire the NEAR receiver, 24 percent indicated that they were unsure whether they would acquire one, and 19 percent indicated that they probably would not acquire one. This response indicates an extremely high interest for a consumer product and can be interpretated as reflecting the importance that people attach to an early alert of danger when they are well aware of the danger. The interest in a radio alert and warning receiver would probably be even higher than for the NEAR receiver, since the warning function would be combined with the alerting function in a single product. Thus, in the case of a rapid buildup of a crisis it is likely that between two-thirds and three-quarters of the households would try to get a receiver.

In the case of a relatively slow buildup to a severe crisis, where the likelihood of an attack would grow to high proportions over a period of many months or even years, people would have a very high consciousness of danger and would frequently think of measures they should take to protect themselves. If frequently exposed to the opportunity to buy a receiver in such a case, people would tend to buy in a more orderly manner, with their purchases stretched out over a long period of time, but with many last minute buyers wanting them whenever an attack seemed imminent. Purchases would depend on the degree of the crisis, the price of the receiver, and the benefits expected. If a receiver distribution program was undertaken before the crisis reached major proportions, the total quantity of receivers that would be purchased could be estimated on the basis of the results of the Pittsburgh NEAR study referred to earlier. That study was undertaken in a way as to reflect public buying attitudes under conditions of a high state of awareness of possible danger of conflict. The direct questioning technique used in the consumer survey involved 16 questions about international tensions, cold war outcomes, and civil defense.

The first four questions dealt with opinions of world tension at the time of the survey, in prior years, and in future years, rated on a scale of zero (no tension) to 10 (extremely high tension). The next five questions dealt with eleven possible outcomes of the cold war.

---

* The NEAR System: A Study in Public Acceptance, Jiri Nehnevajsa, University of Pittsburgh, 1964.

The respondents were asked to select those outcomes that were: (1) most likely, (2) least likely, (3) most desirable--to them, (4) most wanted by the Soviet Union, and (5) most wanted by the United States. Thus, the respondent was asked to look at the situation from several viewpoints besides his own, and was brought into a high state of awareness on very unpleasant issues. The types of outcomes that were considered ranged from peace by various means, to major war with the outcomes of win or lose, total destruction, revolution, and third force emergence.

Next, there were two questions about the likelihood of nuclear war within five years, and the respondents were asked to give their views as of the present and as of six months earlier. The questions that followed asked the respondents when they thought the cold war would end, if ever.

Having been brought up to this level of consideration of world issues, the respondents were then asked to consider two questions regarding protection from fallout, involving the desirability of six possible measures ranging from adequate fallout protection to evacuation, ballistic missile defense systems, and disarmament.

Then the respondents were asked to rate the likelihood of disarmament, as they viewed this issue at the time and as they viewed it six months earlier.

After these 16 searching questions, with 18 suggested alternatives, the respondents were finally asked how they thought they would first learn of an enemy attack threatening the United States. The possibilities included sirens, radio, TV, and several other options. The next question asked people to rate the present alerting system in their area on a scale of 4, ranging from very good to poor.

With this last question, the respondents were brought very close to the primary purpose of the survey, which was to determine their interest in buying, leasing, or accepting a free NEAR device. Having led them through many questions that made them think about some of the national and international issues that affected their own survival and measures for protection that could be taken, the respondents were in a frame of mind similar to what would exist during a crisis that had built up slowly and in which there had been national and local discussion of vital civil defense problems.

Since the radio alert and warning receiver performs the same alerting function as the NEAR device and has the added benefit of a warning function, it is assumed that people would be at least as receptive to buying the radio receiver as the NEAR device. Accordingly, the survey responses can be used to estimate the number of people that would buy the radio alert and warning receivers under the same conditions. Since the survey was limited to one member of each household interviewed, it is assumed that each respondent reflected the view of a single household, within the limits of sampling accuracy.

At $5 per receiver, 44 percent indicated that they would definitely buy, while at $25 per receiver, 18 percent would definitely buy. About 20 percent were in the "likely to buy" category and about 10 percent were in the "may buy" category (see Table 1).

Estimates of the total percentage of households that would buy the radio receivers under these crisis conditions may be obtained by assuming that all those in the "certain to buy" and "likely to buy," and half those in the "may buy" categories, would actually purchase one. These estimates are tabulated in Table 2. Thus, over half the households would eventually buy a receiver for $15 or less, given the opportunity. This figure represents the total percentage that would buy over a period of time.

The rate at which people would buy receivers under a crisis condition and the total ownership would depend on the rate of buildup of the crisis, its intensity, and its duration. Purchases would be low at first and would build up to a peak, and then would decline as total ownership increased.

Ways To Stimulate Demand under Noncrisis Conditions

Demand for the radio alert and warning receivers in a noncrisis period can be stimulated in several ways. First, continuation of the national fallout shelter program would provide people with the assurance that shelters exist, and people would be more likely to buy receivers. Second, education of the public about civil defense, the shelter program, and advertising of the receivers themselves would strongly stimulate receiver sales. Third, immediately useful functions might be added to the receivers to increase their appeal, such as adding a local storm and disaster warning capability or an entertainment function.

Continuation of National Shelter Program

Some prime requirements for the initiation of any alert and warning system are that shelters exist to house essentially all people that are expected to obtain the alert and warning receivers; that people know where these shelters are located, and what they should do in case an alert and warning message is received; and that people believe that prompt use of the shelters would help save their lives. These points were frequently emphasized by the manufacturers and merchandisers interviewed during this study, and also were brought out by responses to civil defense questions in the University of Pittsburgh NEAR survey. An example of this is clearly shown in the NEAR survey when people were asked what they thought the likelihood was of having fallout shelters throughout the nation and also shelters against blast, heat, etc., in large cities. Those who would buy or lease the NEAR device at any price mentioned had high expectations--67 on a scale of 100 that such shelters would exist, while those who would not buy or lease at any price had lower expectations--51 on the same scale.

Table 1

PERCENTAGE OF RESPONDENTS LIKELY TO BUY A NEAR RECEIVER

Scale Value		Purchase Price			
		$5	$10	$15	$25
10	Certain to buy	44.4%	32.1%	23.8%	18.1%
6,7,8,9	Likely to buy	19.2	20.3	20.9	16.7
5	May buy	11.3	12.4	12.0	11.9
1,2,3,4	Unlikely to buy	8.0	12.2	15.3	15.4
0	Won't buy	17.1	23.0	27.9	37.0

Table 2

PERCENTAGE OF HOUSEHOLDS THAT WOULD BUY A RADIO ALERT AND WARNING RECEIVER UNDER SEVERE CRISIS CONDITIONS

Purchase Price	Percent of Households
$ 5	69%
10	58
15	51
25	41

Although firm programs are under way to improve the availability and stocking of shelters in the United States, much remains to be done to complete the programs and to educate people about them. Only about one-third (35 percent) of the population could be housed in the shelters that had been marked as of June 30, 1964, although about twice as many (67 percent) could be housed in shelters that have been located in the National Fallout Shelter Survey, while relatively few spaces--corresponding to about 13 percent of the population--were stocked with emergency supplies.

Fortunately, the number of marked and stocked spaces is increasing rapidly because of the ongoing civil defense programs, and it is important that these continue if an effective program of receiver distribution is to be undertaken. However, few people are aware of the location of shelters that would protect them and are poorly informed as to measures that they should take should the threat of an attack occur. Accordingly, people should be told specifically where to go and what to do in case of a threat. This will require an extensive amount of education.

Education and Advertising

Education of the public about civil defense, the shelter program, and the radio alert and warning system should be undertaken prior to any program to distribute receivers. This kind of education might best be done through a national advertising campaign, together with a stepped-up educational campaign in schools and other educational avenues. Specifically, the advertising should be directed at the following:

1. Convincing people that a civil defense program is important to national survival.
2. Informing people that the nation has a sensible civil defense program, supported by the executive and legislative branches of the federal government, as well as by the state and local governments.
3. Educating people on the specific parts of the civil defense program.
   a. Educating people about shelters, the location of shelters, and the fact that shelters improve their chances of survival.
   b. Educating people on other measures that they should take to improve their chances of survival.
   c. Informing people that the radio alert and warning receiver is an essential part of civil defense and showing how it will improve the chances of survival.
   d. Educating people on what to do after being alerted.

It is estimated that an advertising and educational campaign directed toward these goals with $5 to $10 million worth of annual advertising would be necessary to achieve a high level of buying interest on the part of the public. Such a program would have to be continued for several years. An advertising campaign of this magnitude could be obtained at relatively low

cost to the federal government. For example, the Advertising Council has been very helpful in the past in helping obtain free advertising space of such magnitudes for federally sponsored programs. The extent to which such cooperation would be available for civil defense would depend on the soundness of the radio warning system, on other parts of the civil defense programs, and on the support generated for the entire program within Congress and among public opinion molders. Such advertising support could also be obtained from the manufacturers of the receivers, if the likely sales level was sufficient to justify advertising expenditures.

With an advertising campaign of these proportions, up to about 10 percent of the households would eventually buy one for $15 to $25 if the receiver provided only the nuclear attack and warning capability. This estimate is derived from the sales of automobile seat belts, a product with safety values similar to those of receivers and selling for about the same price. By the end of 1962, prior to their mandatory inclusion in cars in many states, 10.6 percent of all cars were equipped with seat belts, according to the American Seat Belt Council. Advertising of seat belts, mainly through the work of the Council, has approached the levels suggested for the warning receiver. Thus, in spite of continual advertising of the safety value of seat belts, heavy advertising was needed over a period of at least ten years to get over ten percent of the potential users to own them.

If the receivers were to be distributed to the public at no charge, a much smaller amount of advertising would be required. In this case, the education could be limited to explaining the existence of the program and to providing some general civil defense information.

Adding a Useful Function

Adding a useful function to the radio alert and warning receivers could greatly increase the consumer's interest in the receivers. Two functions that might be added are: (1) storm or natural disaster warning and (2) entertainment.

Storm and natural disaster warning functions could be included in the receiver with no added cost to the consumer, if the radio network used for nuclear attack warning could also be used to provide this type of warning message. Such a warning function has a positive value in people's minds because they are aware of local consequences of severe weather. Although the consumer's interest in having a warning function of this type is regional, a rather high percentage of the people would like to have better warning of severe storms or natural disasters. Some evidence of their interest was obtained in the University of Pittsburgh NEAR survey, in which respondents were asked whether such a warning would make the NEAR device more or less desirable to them. A very large percentage--68 percent--indicated that it would, while only 4 percent indicated they would not buy such a combined device at all.

The prices that people would be willing to pay for this function can be estimated from this study. Eighty-four percent of those who felt this function would make the NEAR device more acceptable were willing to pay one dollar extra, and 25 percent were willing to pay $10 extra, as shown in Table 3. It is likely that people would be willing to pay for this added function in periods of low international tension as well as in periods of high international tension. Thus, it is quite likely that a significant number of receivers would be bought for this function alone. Merchandisers, manufacturers, and broadcasters all emphasized the desirability of this provision, stating that the storm or disaster feature would have much greater appeal in many parts of the country than would the nuclear attack alert and warning feature.

Based on the University of Pittsburgh NEAR study, it is estimated that 15 to 20 percent of all households would buy a radio and alert warning receiver if it included a storm or natural disaster warning function.

Table 3

PRICE-DEMAND RELATIONSHIP--STORM AND DISASTER WARNING FUNCTION

Maximum Price	Percent of "Acceptable" Respondents	Percent of All Respondents
$ 0	96%	65%
1	84	57
2	70	48
5	54	37
10	25	17

Adding an entertainment function to the radio alert and warning receiver or adding the alert and warning function to an entertainment product would make the receivers much more attractive to consumers, since entertainment products have a high positive value. Because the present designs of the receivers have essentially all the components of an ordinary radio receiver, it should be possible to add the entertainment capability of AM radio reception for very little cost. With an entertainment function added to the receiver by this means, up to 65 percent of the households would buy one within ten years if there was no additional charge, and up to 40 percent would buy one if there was an additional charge of $5.

Including the receivers in entertainment products, such as in radios, TVs, and radio-phonographs has the greatest potential of all to stimulate sales of the receiver in times of low international tension. Although no specific estimates have been made of the additional cost, several manufacturers made rough estimates for adding this capability to ordinary radios. Their estimates ranged from about 50 cents to over $5, depending on the detailed system chosen for the alerting signals that would turn on

the receivers. Such receivers could thus be sold at prices only slightly higher than prices for ordinary radios. At the lowest added price mentioned (50 cents), some manufacturers thought they might eventually absorb the added cost because of expected reductions in manufacturing costs over time. It must be recognized, however, that an alert signalling and control system of the sophistication now being planned by OCD could not be built for 50 cents. This low estimate represents a simpler, less automatic system (for example, one that might depend on the user leaving his radio tuned to a 24-hour station at night), which might complement the more reliable, automatic type that OCD is contemplating.

Although it would not be practical to integrate the receiver circuits into many present-day models of radios, TVs, and radio-phonographs because of the large power consumption of the vacuum tubes used, it is expected that within five years nearly all models will use low power drain transistors and such integration would be quite practical. Design work could begin at any time that the basic receiver system is decided on. In addition, the manufacturers could be helpful in improving on the present designs of the alert and warning circuits over time.

If all AC-operated clock and table radios, all TVs, and all radio-phonographs sold included this warning function, an estimated 17 million receivers would be placed in homes annually, on the basis of sales to new households and replacement and new sales to households already owning these products. If one assumes random buying of such products, 75 percent of all households would have bought one or more of them in five years, and over 90 percent would have bought one or more in ten years.

Because of the large sales of these products, it would be desirable to include the alert and warning function in all of them. To achieve the levels of ownership estimated, such inclusion would have to be mandatory. Mandatory inclusion would require Congressional action. In view of past history in similar circumstances (UHF television, seat belts, and automobile smog control devices), it would probably take several years to obtain such legislation. To speed the process, Congressional approval might be sought at the same time publicity is started for the shelter program and installation is begun on the alert and warning system.

It would be desirable to offer several forms of the radio alert and warning receiver to the public in order to achieve the highest level of distribution possible. Therefore, if the receiver is included in radios, TVs, and radio-phonographs, it would be well to offer several models of these and also to offer individual receivers independent of any other product or function. The basic forms might include:

- Radio alert and warning receivers
- Radio alert and warning receivers with storm and natural disaster warning

- AC-operated clock and table radios--standard broadcast and/or FM--with radio alert and warning
- Television sets with alert and warning
- Radio-phonographs with alert and warning

Manufacturers and merchandisers generally agreed that they would cooperate in offering one or more forms of the receivers provided that the basic civil defense program was adequately explained to the public and sufficient publicity was given to the program and to the alert and warning system.

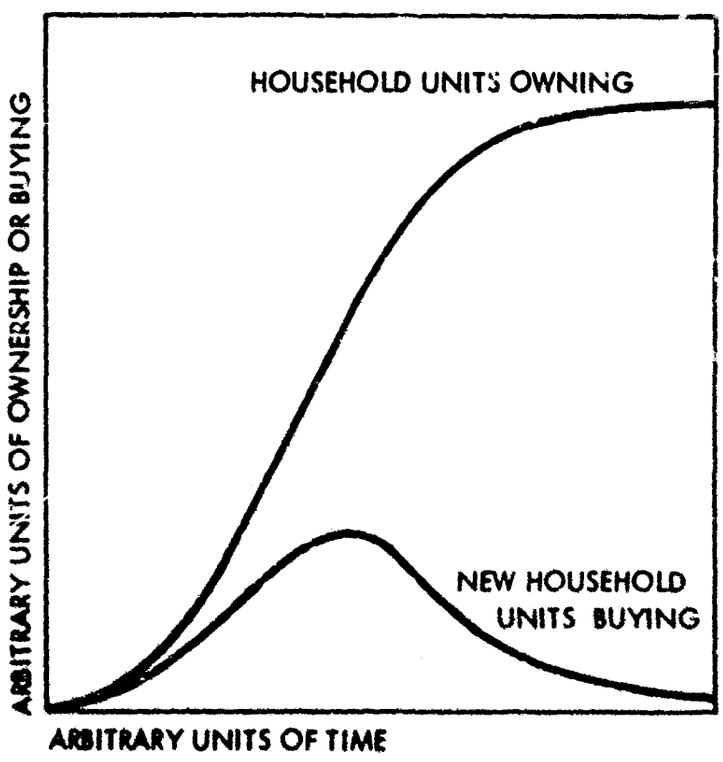
Buildup of Ownership

The buildup of ownership to the levels discussed will depend on the degree of international tension and the means used to stimulate demand. Figure 3 illustrates the manner in which units purchased and ownership would increase under conditions of slow buildup of a crisis or constant international tension. This figure uses arbitrary scales for purchases, ownership, and time. Any sudden change in tension, either up or down, would, of course, raise or lower the purchase rate and thus change the slope of the ownership curve.

Curves of the type shown in Figure 3 are applicable for a wide variety of consumer products. To illustrate this point, historical data for three selected products are shown in Appendix A.

Figure 3

HYPOTHETICAL BUYING AND OWNERSHIP OF ALERT AND WARNING RECEIVERS



IV MEANS OF DISTRIBUTION

Three means of distributing receivers to the public can be considered: direct sale by the federal government, direct sale through normal trade channels, and free distribution. The relative effectiveness of each of these three means depends on the level of international tension, the time period allowed to reach the desired number, the form of the receiver, and the cost to the consumer.

Direct Sale

Direct sale by the government would be difficult to implement because the government does not have facilities to sell such products. A more logical approach would be to use established trade channels, such as retail stores and mail order houses. Moreover, such an approach would give far greater product exposure to the public.

Direct sale through established retail outlets under conditions of low international tension with an adequately supported educational program would result in only moderate sales (about 10 percent of the households buying one during the next ten years). Although reasonable cooperation could be expected from manufacturers and merchandisers if the warning receiver was sold alone, better cooperation and considerably greater public demand could be expected if other functions were added to the receivers and a large selection of types were offered.

Free Distribution

Free distribution of radio alert and warning receivers to the general public could be handled in several ways. The simplest and most direct method would be through the mail from local warehouses. The Post Office could distribute a 16-ounce package via third class mail for about 30 cents locally.

Free distribution could provide all homes with a receiver. It is highly likely that the receivers would be used initially, but it might be difficult to get people to continue to use the receivers after the novelty wore off, and to replace them when necessary. Continued education would help to assure that the maximum number of receivers was kept in use. If local storm or disaster warning features are included, the likelihood of continued use would of course be considerably higher.

Obtaining Congressional approval to purchase receivers for free distribution to the public might take a considerable amount of time. Congress has been reluctant to approve the use of federal funds for large scale shelter construction.

Distribution under Crisis Conditions

To ensure rapid distribution of the receivers in time of crisis, the receivers could be distributed by any of the means previously discussed. Or they could be distributed through local civil defense channels, with perhaps fire or police departments serving as places where people could either buy one or receive a free one. Distribution could also be made through normal trade channels, but it would be desirable to supplement these channels with governmental channels to avoid public concern over profiteering.

Distribution to Emergency CD Personnel

In any distribution program, it is important to see that persons who have been assigned vital civil defense roles be among the first to obtain receivers. There are nearly 3 million of these people, as shown in Table 4 on the following page, 500,000 of whom should have the highest priority in getting a receiver. For effective operation of the civil defense program in future years, an even greater number of people might be considered as having important emergency roles. For example, the planned staffing of emergency operating centers might reach 150,000 people. Also, if the shelter program continues as planned, there would probably be more than 300,000 shelter managers and assistant managers. Thus the total number of people that might be called upon in an emergency might exceed 3 million, as shown in Table 5. The total number would correspond to about 5 percent of the 60 million households projected for the United States in 1970.

The 15,000 paid CD employees should be able to receive an alert and warning message at home as rapidly as possible. Many of them are already able to receive such messages quickly through existing communication channels, but there is no provision as yet for others to do so. In addition, all EOC and key local administrative and political personnel should receive rapid notification of an emergency so that emergency operations could begin with the least delay. At present, relatively few such people have any automatic method of being notified at home. Also, all shelter managers and their designated assistants should receive immediate notification to open shelters to the public. All other people with emergency assignments, about 2.5 million, should be able to receive the alert and warning message promptly at home if at all possible. These include people concerned with fire, police, health, medical, emergency welfare, and others who would be vital during or after an emergency. Because of the responsibility of these people in civil defense activities, it would seem logical to distribute receivers to them free of charge, as is done for other civil defense items.

Influence on Total Ownership of Distributing Receivers to CD Personnel

Giving the receivers to the 3 million CD personnel would, as mentioned above, put them in the homes of 5 percent of the households. Therefore,

Table 4

PERSONS HAVING CIVIL DEFENSE ASSIGNMENTS AS OF JUNE 30, 1964

Type of Activity	Total All Types of Personnel		Government Employees				Others with CD Emergency Assignments	
			Doing Full-Time CD Work		With CD Emergency or Part-Time Assignments			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total all activities	2,740,858	100%	5,614	100%	886,714	100%	1,848,530	100%
CD administration	51,129	2	2,390	43	19,405	2	29,334	2
Communications and warning	121,573	4	215	4	30,092	3	91,266	5
Emergency welfare	217,998	8	89	2	72,259	8	145,650	8
Engineering	202,463	7	74	1	119,990	14	82,399	4
Fire	457,579	16	91	1	142,539	16	314,949	17
Health and medical	493,748	18	138	2	103,684	12	389,926	21
Police	383,268	14	147	2	171,888	19	211,233	11
Public information	18,718	1	109	2	4,058	*	14,551	1
Radiological defense	178,308	7	164	3	47,558	5	130,586	7
Rescue	162,370	6	38	1	40,372	5	121,960	7
Supply	35,690	1	76	1	10,787	1	24,827	1
Training and education	44,563	2	319	6	13,919	2	30,325	2
Resources control	23,589	1	70	1	6,922	1	16,597	1
Transportation	152,182	6	39	1	60,330	7	91,813	5
CD clerical support	52,864	2	1,393	25	20,962	2	30,509	2
Other	144,818	5	262	5	21,951	2	122,605	7

NOTE: Percentage breakdown may not add to totals because of rounding.

---

* Less than one-half of one percent.

Source: Office of Civil Defense.

Table 5

EMERGENCY CIVIL DEFENSE PERSONNEL

Class		Number
I	Paid CD employees (full-time and part-time)	15,000
II	Key state and local CD personnel	
	Emergency administration (EOC personnel)	150,000
	Other administrative and political personnel	50,000
	Shelter managers and assistants	300,000
	Subtotal of highest priority CD personnel for alerting and warning purposes	500,000
III	Others with CD emergency assignments	2,500,000
	Total	3,000,000

Source: Stanford Research Institute.

the percentages given earlier as estimates of the total number of households that would have the receivers under the various means of distribution during noncrisis times would be increased because of the word-of-mouth advertising resulting from having receivers in the 3 million homes of CD personnel. The increase in ownership would be slight in the case of free distribution to the general public but more noticeable in the case of sale through normal trade channels with no educational or advertising program. The summary figure in Section II shows the effect on total ownership of placing receivers in the homes of CD personnel.

Producing Receivers in Sufficient Amounts To Satisfy Demand

Under normal circumstances, there should be little difficulty in producing receivers in the quantities required. In the case of open market sale under present international tensions, there is sufficient production capacity to meet the demand forecasted. In the case of free distribution to all households under present conditions, about 60 million receivers would be required. Production capacity would have to be increased to supply such quantities, and it would take about five years to do so in an orderly manner.

Under conditions of severe crisis, large quantities of radio alert and warning receivers would be in demand at one time. Unless these were stockpiled, it would not be possible to meet the demand. However, if it is assumed that a distribution program is undertaken prior to the development of such a crisis, and a moderate number had been distributed, say, a few million over a period of a few years, it would be much easier to meet the sudden added demand in time of crisis.

One means of assuring that there would be adequate production capacity for receivers would be to produce and distribute receivers for use by CD personnel, as well as placing the receivers for sale on the open market. Special components for the receivers that were not normally used in other products might be stockpiled in moderate quantities to reduce the time necessary to raise production to the necessary levels. Thus there would be production experience and a supply of components should a crisis develop.

Consumer Survey

To help in planning the types of models to be offered and the pricing structure that would be most appropriate, it would be desirable to undertake a comprehensive consumer survey under conditions reflecting consumer buying attitudes under noncrisis conditions (as contrasted to the crisis conditions reflected by the NEAR survey). Such surveys are frequently undertaken by merchandisers and manufacturers to guide them in introducing new products. The survey should reflect the number and type of product consumers would be most likely to buy and use and the price they would pay both in normal times and under conditions of international tension. Suggestions should be solicited to guide in the design, advertising, and methods of merchandising.

Follow-up surveys after the receivers have been on the market for some time would be helpful in redirecting the merchandising efforts and in discovering improvements in the products that would increase the marketability.

Appendix A

BUILDUP OF OWNERSHIP OF SELECTED CONSUMER PRODUCTS

Tables A-1 through A-3 show the buildup of three consumer products from their introduction on the market till a high level of ownership has been achieved. Figure A-1 converts the data to curves. In spite of the fact that these are all entertainment products and therefore have a "positive" appeal as contrasted with a safety product like the radio alert and warning receiver, purchases and ownership of the receivers during a noncrisis period, if sold as an individual item, would follow the same pattern as shown here. (The rate of distribution would not necessarily be the same, and the levels attained by these popular products would probably not be reached.) Should a crisis develop, of course, demand would shoot up as in the case of the fallout shelters during the Berlin crisis. Also, if included in another consumer product, the ownership curve would be different, as discussed in the text.

Figure A-2 shows the yearly increase in ownership of the three selected consumer products.

Table A-1

HOME RADIO OWNERSHIP
(End of Year)

Year	Years after Start of Commercial Sale	Percentage of Households Owning a Radio Set	Increase in Ownership (Percent)
1922	1	0.23%	0.23%
1923	2	1.53	1.3
1924	3	4.65	3.12
1925	4	10.0	5.35
1926	5	16.0	6.0
1927	6	22.7	6.7
1928	7	27.5	4.8
1929	8	34.5	7.0
1930	9	45.8	11.3
1931	10	55.1	9.3
1932	11	60.5	5.4
1933	12	62.5	2.0
1934	13	65.1	2.6
1935	14	67.2	2.1
1936	15	70.5	3.3
1937	16	74.0	3.5
1938	17	79.0	5.0
1939	18	79.9	0.9
1940	19	81.1	1.2
1941	20	81.5	0.4
1942	21	83.9	2.4
1943	22	83.7	-0.2
1944	23	87.6	3.9
1945	24	88.2	0.6
1946	25	88.6	0.4
1947	26	91.8	3.2
1948	27	92.8	1.0
1949	28	93.2	0.4
1950	29	93.5	0.3

Sources: NBC. Bureau of the Census.

Table A-2

TELEVISION OWNERSHIP
(End of Year)

Year	Years after Start of Commercial Sale	Percentage of Households Owning a TV Set	Increase in Ownership (Percent)
1946	1	0.04%	0.04%
1947	2	0.4	0.36
1948	3	2.3	1.9
1949	4	9.0	6.7
1950	5	23.5	14.5
1951	6	34.2	10.7
1952	7	44.7	10.5
1953	8	55.7	11.0
1954	9	64.5	8.8
1955	10	71.8	7.3
1956	11	78.5	6.7
1957	12	83.2	4.7
1958	13	85.9	2.7
1959	14	87.1	1.2
1960	15	89	0.9
1961	16	90	1
1962	17	n.a.	3
1963	18	93	

Sources: TV Fact Book. Bureau of the Census.

Table A-3

PORTABLE TRANSISTOR RADIO OWNERSHIP
(End of Year)

Year	Years after Start of Commercial Sale	Percentage Ownership Based on Population 15 Years and Older	Increase in Ownership (Percent)
1955	1	0.1%	0.1%
1956	2	0.9	0.8
1957	3	2.1	1.2
1958	4	5.0	2.9
1959	5	10.8	5.8
1960	6	18.4	6.6
1961	7	30.2	11.8
1962	8	41.5	11.3
1963	9	51.2	9.7
1964	10	60.5	9.3

Sources: Department of Commerce. Electronic Industries Association. Stanford Research Institute.

Figure A-1

OWNERSHIP OF SELECTED CONSUMER PRODUCTS

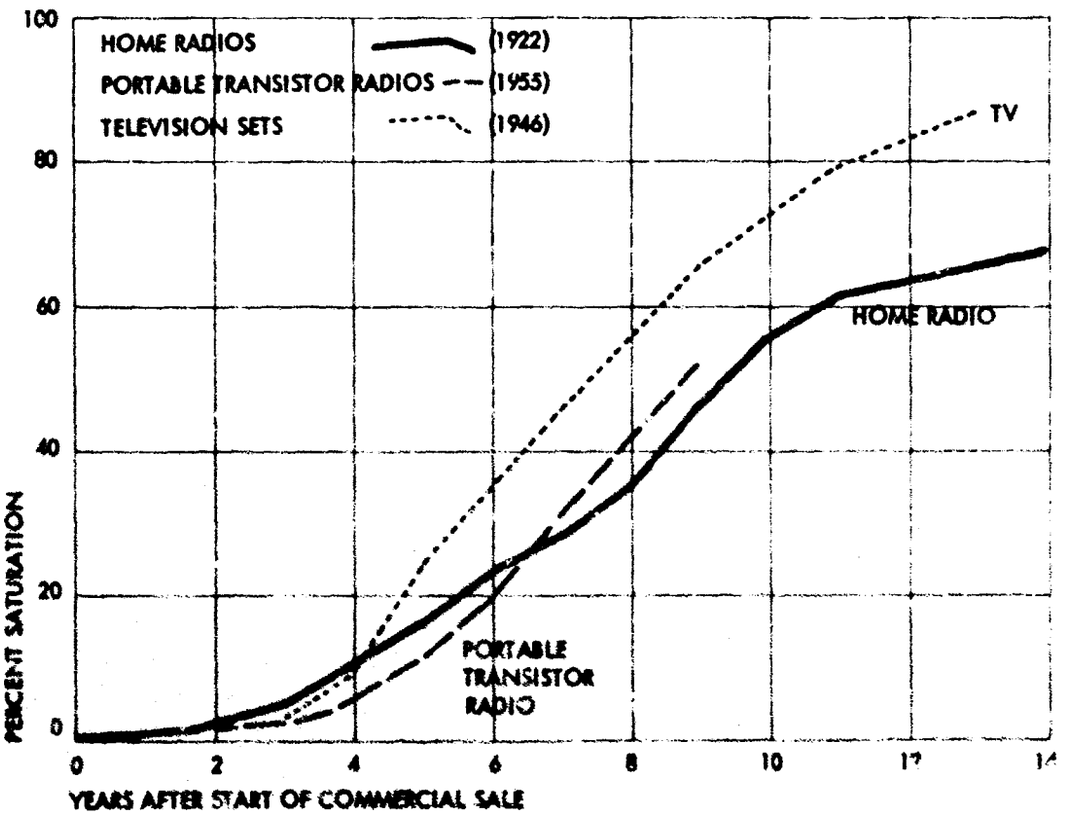
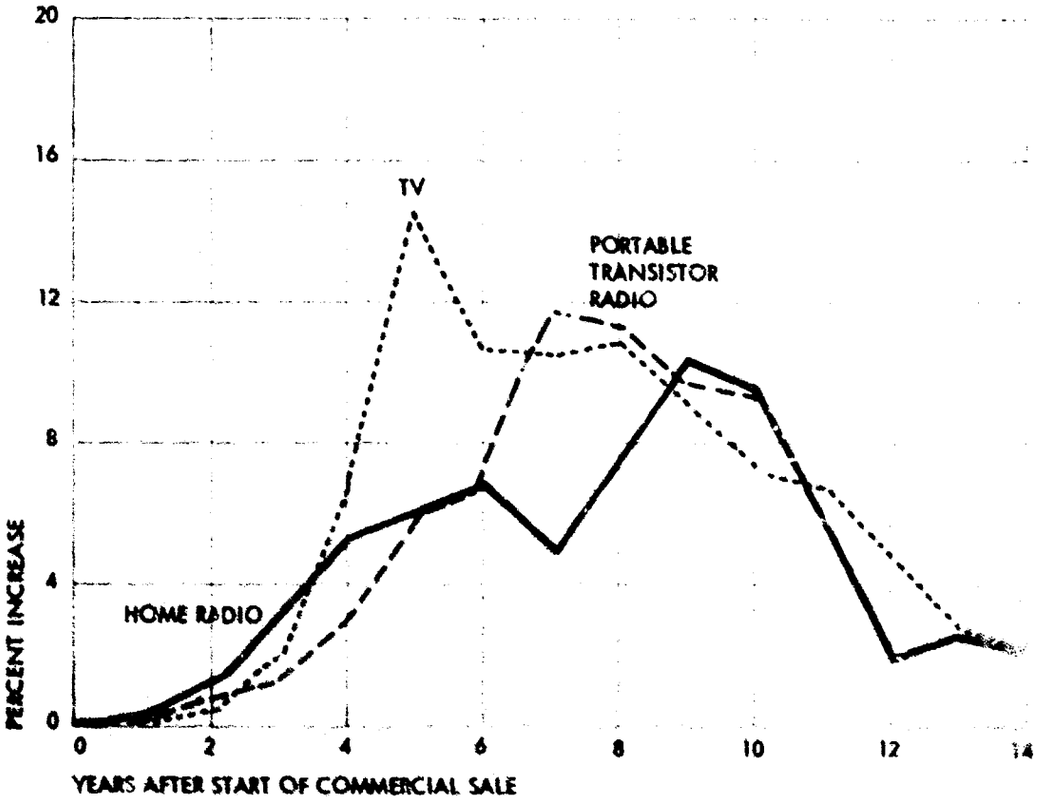


Figure A-2

YEARLY INCREASE IN OWNERSHIP
OF SELECTED CONSUMER PRODUCTS



Appendix B

ORGANIZATIONS AND PERSONNEL CONTACTED

CBS Laboratories
Stamford, Connecticut
Arthur Kaiser

Electronic Industries Association
James D. Secrest, Executive Vice President
Robert Y. Nevius, Staff Director, Industrial Division

Fairchild Semiconductor Company
Mountain View, California
John S. MacDougall, Application Engineering Manager
David Bingham, Application Engineer

General Electric Company, Radio and Television Division
Syracuse, New York
John D. Seaver, Manager, Business Development Operations
Utica, New York
Harwood B. Moore, Advanced Development Engineering

ITT-Kellogg
Chicago, Illinois
L. E. Gough, Laboratory Manager

Heath Company
Benton Harbor, Michigan
Charles M. Kirkland, President
Neil Turner, Marketing Director

Mororola, Incorporated
Consumer Products Group
Franklin Park, Illinois
Garth Heisig, Group Director, Consumer Products Engineering
Norman Parker, Staff Scientist
Robert McCarthy, Product Planning

National Association of Broadcasters
Washington, D.C.
George W. Bartlett, Manager, Engineering

Philco Corporation
Consumer Products Division
Philadelphia, Pennsylvania
Edgar M. Creamer, Chief Engineer
Lee Berberian, Product Planning Manager

Radio Corporation of America
New York City, N.Y.
Theodore A. Smith, Executive Vice President Corporate Planning
Herbert Brins
Lawrence Siegel, Project Manager, Defense Products
Kenneth Curtin, Staff Engineer, Defense Products
Gerald G. Garlach, Planning, Defense Products

Sears, Roebuck and Company
Chicago, Ill.
Vincent Graham, Assistant to Merchandising Vice President
John J. Amato, Supervisor, Radio, Television and Musical Instrument Department
Ed Collins, Radio Buyer

Warwick Electronics
Niles, Ill.
Lawrence G. Haggerty, President

Zenith Radio Corporation
Chicago, Ill.
Karl E. Hassell, Assistant Vice President
Albert Cotsworth, Chief Engineer
George W. Fyler, Engineer